

Compile on Raspberry PI

Prerequisites:

HW setup: Make sure that you have:

1. A decent power supply. The Pi is power hungry and especially for multi-core compilations and later on moving and zooming maps, you'll need full power. A 1.5 Amps mobile phone charger won't do it, most of the 2 Amps neither, especially in combination with ultra thin wired USB signal cables! The Pi seems to create enormous current bursts, rather than a continuous current flow. My Amp meter shows an average flow of only 0.5A, but I know that the spikes will go up to 2-3 Amps! Zooming, panning and heavy display activities cause these bursts, hence if your Pi crashes during such actions, it's most likely due to insufficient power or too thin cables.
2. A quality Class 10 SD-Card. Most of instabilities or latencies come from lousy SD-Cards or insufficient power supplies
3. Good Storage. You might wonder, where to put your chart files. Either, buy a bigger SD card (32 Gb), or leave the SD card for Jessie and the app and add a decent USB Memory stick. The Pi mounts memory sticks automatically under /media/... The Pi is picky concerning mem sticks!

Make sure, you are on the latest OS version

```
$sudo apt-get update  
$sudo apt-get dist-upgrade
```

Use RASPI-CONFIG to enable OpenGL. Since the driver is still Beta, you can't do this from the GUI Desktop.

```
$ sudo raspi-config
```

⇒ Advanced Options, "GL Driver", enable
Add the following lines to /boot/config.txt

```
$sudo vi /boot/config.txt  
framebuffer_depth=32  
framebuffer_ignore_alpha=1
```

Getting the sources and building OpenCPN:

Simply follow the Linux build instructions for Ubuntu/Debian

Random notes:

Be aware that you also have to make provisions for the HW you want to connect to the Pi, to give you GPS, AIS etc. and where and how you want to connect these to the various interfaces and protocols:

In most cases you want

```
gpsd gpsd-clients
```

There is an awful lot of things to consider when adding HW to the Pi, which has nothing to do with compiling OpenCPN for Pis. OpenCPN is just using'em. If that scares you away, consider to use OpenPlotter, which is a pretty nice fully integrated HW & SW solution for amazingly affordable HW prices. May be bitTorrent wasn't the luckiest choice as distribution channel, but for those who are scared for security, you could buy their prepopulated SD Card for small money.

The same applies for the question, how you want later to access the Pi and OpenCPN, underway and away from your home router/LAN. Considering to use the Pi as WiFi access point... Once configured as AP, you can't use it for accessing public WiFi nets in harbors!

When away from your internet@home your Pi won't have any possibility to fetch the current time, hence after power on, your date/time setting will be ways off! You'll need to read the date/time from an NMEA GPS message and stitch it into the Pi's clock. Afterwards, you'll need the NTP service from e.g. gpsd to keep it accurate. The NTP won't do the trick alone, because it will not touch your date/time setting, if they are off for more than 1000 secs.

Last not least: If the a.m. process does not produce any obvious errors or aborts and you end up with an executable, things should be pretty much OK. Subsequent instabilities are most likely not caused from your compilation or SW bugs all over the place. On a more or less clean installation on an unspoilt RPI, everything should work fine. If not, consider HW issues (as described above).

Additional Details

I'm running the Pi headless; that's because I probably have no issues w/ performance limitation from v-sync on TV screens. 60 fps looks very much NTSC to me! Be sure that you are on a newer Jessie kernel, at least the Dec. 2016 version. I am not so sure about having to switch ON OpenGL in the OpenCPN config menu... I observed some instability on high detailed & quilted charts, when zooming. I switched OFF OpenGL in OpenCPN, but left it ON in the Pi. The amazing result was, that the zoom and pan display speed was equally fast as before, but the instability was gone. The thing runs now since several days beton stable and I can do whatever I want w/out being able to crash it ! This is due to a bug in OpenCPN. Please refer to:

<http://www.cruisersforum.com/forums/f134/opencpn-on-raspberry-pi2-140940-18.html#post2322329>

Why am I so picky about power bursts? Because in a normal computer, big capacitors are added and power supplies are fast regulators to deal with big power bursts. Mind you, the Intel 4 Core CPUs are

rated up to 130W at 1.1V, means 120Amps or so, while in idle mode, actual power consumption is 30W or less. Hence the power consumption jumps between 30 and 130 Watts in milliseconds, as CPU power/load is required. We should understand, that despite the small size of the Pi, the Quad-Core CPU in there is a high performance beast of burden!! Due to the size of the Pi, they had no chances putting big capacitors onto the board, and they unloaded the burst problem to an external power supply, which is then by many users replaced by a simple Mobile wall [plug](#), underestimating the untold power requirements of the Pi.

One more word concerning Power. I have seen specs for the Pi, saying it should be supplied w/ 5.1V ! That's essential, because the Pi has at the entry a self healing poly-fuse and a diode to protect it against power connections in the wrong sense (+/-). The [price](#) to pay for is that the self healing fuse has a significant internal resistance; That means that right at the power entry to the Pi there is a loss of 100-200 mV, variable with the current intake. Just running it at a Mobile [charger](#), which are not so stable and go under heavy load even below 5V, the Pi is starving for Power. For the full story and differences between Pi2/3, please refer to the original page, which shows IMHO a bit an optimistic view. Scroll down to the power section of the table and moreover to the respective power chapter in the text. Notice the 2.5A under RPi3 and be aware that the RPi 3 Documentation still lacks individual updates, because the RPi3 is so much similar to the RPi2, except for power !

http://elinux.org/RPi_Hardware

In the new PIXEL Desktop, there should be an indication of low power, if the Pi still has got enough to switch it on....

Good luck hk

Raspberry Pi, Pi 2 and Pi 3 Benchmarks - Roy Longbottom's PC benchmark Collection
<http://www.roylongbottom.org.uk/Raspberry%20Pi%20Benchmarks.htm>

PS: Feb 2017, OpenCPN V 4.5.2xx and Jessie Dec. 2016 Kernel on a Raspberry Pi 3B

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